

▼ **Internet 2 Industry Strategy Council Meeting April 16, 2004:
Cyberinfrastructure Movement: Status and Industrial Participation,
Dan Atkins (atkins@umich.edu)**

▼ I Brief Background

- 1.1 Motivation for Panel
- 1.2 Comments on the term: cyberinfrastructure
- 1.3 Process

▼ 2 Key Findings and Recommendations

- 2.1 Tech push, S&E pull, inflection point
- 2.2 Revolutionary potential.
- ▼ 2.3 Components; "nodes and connection"
 - ▼ 2.3.1 Networking, OS, Middleware
 - 2.3.1.1 growing awareness of "middleware" and good marks for KK activities.
 - 2.3.2 Computation
 - 2.3.3 Data/Information/knowledge
 - 2.3.4 Interconnection with the physical world: instruments, sensors, activation/
fabrication
 - 2.3.5 Interconnection with humans; multi-mode interfaces, visualization
 - 2.3.6 Distant independent collaboration services
- 2.4 CI= hardware, software, services, personnel, institutions
- 2.5 Persistence, continuity
- 2.6 Two dimensions of "advanced cyberinfrastructure": technical performance,
functional completeness/usefulness
- 2.7 Opportunity costs
- 2.8 Interagency and international
- 2.9 Unique opportunity/responsibility for NSF
- 2.10 Organizational issues; not business as usual
- 2.11 Funding recommendations: core enabling R&D, integration, provisioning &
operations; interdisciplinary frontier pilot projects

▼ 3 Activities since report was issued in Jan 2003.

- 3.1 Large global distribution of report.
- ▼ 3.2 CISE reorg: division of Shared Cyberinfrastructure
 - 3.2.1 Sang Kim, Division Head
 - 3.2.2 Jose Munoz, detailed from DoE

- 3.3 Hired several senior consultants: Landweber, King, Atkins.
- ▼ 3.4 Internal Cyberinfrastructure Working Group
 - 3.4.1 Reps from all directorates
 - 3.4.2 has produce internal report very isomorphic to Atkins report without addressing funding.
- ▼ 3.5 New NSF Leadership
 - 3.5.1 Arden Bement - Interim. Seems very supportive.
 - 3.5.2 White House activity searching (Ideas for candidates?)
- ▼ 3.6 CI Workshops in all directorates
 - ▼ 3.6.1 GEO
 - 3.6.1.1 poster child
 - 3.6.2 BIO
 - ▼ 3.6.3 ENGR
 - 3.6.3.1 research, education, synergy between CI and built infrastructure
 - 3.6.3.2 NAE-ENGR Panel
 - ▼ 3.6.4 CISE
 - 3.6.4.1 PI meetings
 - 3.6.5 MPS
 - 3.6.6 EHR - in planning
 - 3.6.7 SBE - in planning
- 3.7 Numerous AD level retreats
- 3.8 Belief, excitement, but *tension (funding model, science driven)*
- 3.9 Sociology and Management are important issues/barriers. (Good news is that this is being recognized.)
- ▼ 3.10 Commitment to optimizing within current budget (increasing) constraints but doesn't seem able to make big push for significant new funding.
 - 3.10.1 expect "flat through 2009"
 - 3.10.2 reallocation and relabeling
 - 3.10.3 Can industry help with creating conditions for significant new money to NSF for basic research and Advance Cyberinfrastructure Program??
 - 3.10.4 Reports of confusion in Congress about NSF intent, especially w.r.t highest-end open computational resources.
- ▼ 3.11 Other

- 3.11.1 Dept of Energy - focus on architecture and provisioning of highest end machines
 - 3.11.2 NIH - BIRN and some other collaboratory projects
 - 3.11.3 Library of Congress - Digital preservation
 - 3.11.4 NASA?
 - 3.11.5 UK e-science
 - 3.11.6 EU
 - 3.11.7 Japan - Earth Simulator is not proof on US loss of leadership in highest end computing: teraFLOPS becoming common; petaFLOPS in 3 years.
 - 3.11.8 Deliberations on future of higher education: US, OECD, Japan, China, South Africa (southern Africa)
- ▼ 4 Discussion of role for industry (need discussion, brainstorming of ISC)
- ▼ 4.1 Development of rationale, the case for support? (General NSF support; ACP particularly)
 - 4.1.1 Important to long-term global economic leadership,,staying at the top of the knowledge value chain.
 - 4.1.2 Important to operating as a global enterprise, e.g. global design teams.
 - 4.1.3 Workforce issues: new models, broader participation, pipeline issues
 - 4.1.4 Seeding new markets and products for IT industry in higher ed and elsewhere
 - 4.1.5 Important to supply chain logistics that enable massive customization and possible competitive advantage for US manufacturing,
 - 4.1.6 OTHER IDEAS?
 - ▼ 4.2 Activities
 - ▼ 4.2.1 Advocacy
 - 4.2.1.1 What?
 - 4.2.1.2 Who?
 - 4.2.1.3 How?
 - ▼ 4.2.2 Co-investment
 - 4.2.2.1 Likely expected or encouraged in future NSF RFPs
 - ▼ 4.2.3 Benefit
 - 4.2.3.1 What
 - 4.2.3.2 When
 - 4.2.3.3 How do we measure? How do we know?

- **4.3 Next steps? Specific roles for UCAID industrial partners?**